1. Choose a suitable filter or kernel that is designed to respond to edge-like features. In the case of 1D convolutions, the filter will be a 1D array of weights. The filter typically consists of positive and negative values that represent changes in intensity or gradient along the data dimension.
3. When the epochs are increased the validation error increases due to few facts.

Early Epochs: In the early epochs of training, the model is still learning the general trends in the data. Both the training and validation errors decrease.

Convergence: As training progresses, the model begins to converge towards minimizing the training error. The training error continues to decrease while the validation error might also decrease initially.

Overfitting: However, if training is continued for too many epochs, the model can start to memorize the noise in the training data. It becomes too tailored to the specific examples in the training set, losing its ability to generalize to new data. This results in the validation error increasing even though the training error continues to decrease.

To prevent that we can to following things.

Early Stopping: Monitor the validation error during training and stop training when the validation error starts to increase. This prevents the model from overfitting and captures the point where it performs best on unseen data.

Regularization: Apply techniques like L1 or L2 regularization to penalize large weights in the model. This discourages the model from fitting noise and encourages it to focus on important features.

Dropout: Introduce dropout layers during training. Dropout randomly deactivates a fraction of neurons during each forward and backward pass, preventing the model from relying too heavily on specific neurons and improving generalization.

Data Augmentation: Increase the diversity of the training data by applying transformations like rotation, scaling, or cropping. This provides the model with more varied examples to learn from, reducing the risk of overfitting.